WILLIAM T. PECORA AWARD

DR. CHARLES ELACHI

In recognition of his outstanding contributions as a scientist, engineer, and manager in developing and demonstrating synthetic aperture imaging radar techniques for Earth sciences and practical applications.

Dr. Charles Elachi has been a leader in satellite-borne synthetic aperture imaging radar remote sensing for studying the solid Earth and oceans. The remarkable capabilities of this technique have been demonstrated by three space systems flown under NASA sponsorship: (1) the Seasat satellite, launched in 1978; (2) SIR-A, carried into orbit on the Shuttle in November 1981; and (3) SIR-B, on the Shuttle flight in November 1984. These three systems were designed and developed at the Jet Propulsion Laboratory under Dr. Elachi's guidance and expert leadership.

The Seasat radar was designed primarily to observe ocean features, but also proved capable of producing highly useful images of land. The Seasat mission was the first flight in space of an imaging radar and its success ensured a sound basis for further development and application.

The SIR-A and SIR-B missions have been progressively more impressive. The SIR-A instruments delineated land surface features in great detail and also penetrated the extremely dry sand of the Eastern Sahara to a depth of several meters to reveal alluvial deposits and drainage patterns which had not been detected by conventional imaging. These findings opened new areas of investigation. The SIR-B mission provided images at a variety of incidence angles and illumination geometries, enabling the construction of stereographic images from the data.

Demonstration of the capability of imaging radar involves considerably more than the flight apparatus, for by its nature the technique produces huge quantities of raw data. Dr. Elachi led the effort to update earlier optical processors and is playing a key supportive role in developing advanced digital techniques for SIR-B data.

The satellite missions have received wide public acclaim. But during the decade prior to these highly visible contributions, Dr. Elachi conducted pioneering work in theoretical analyses and airborne systems to show the potential of imaging radar for oceanography and meteorology on Earth and studying Venus. The breadth of these contributions, represented in over one hundred publications in a variety of technical fields, arises from his unique skill in interpreting radar images and his intimate knowledge of

Earth science. Beyond these notable technical abilities, Dr. Elachi has unusual skill in communicating with his co-workers, engineers and scientists from other disciplines, and with management.

In recognition of these accomplishments, the National Aeronautics and Space Administration and the Department of the Interior take great pleasure in presenting the William T. Pecora Award to Dr. Charles Elachi.

Secretary of the Interior

Administrator, National Aeronautics and Space Administration